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ABSTRACT

This guide is an attempt to provide a workable methodology for helping college students and citizen groups to identify the most pressing environmental problems in their communities and to find solutions to them. With some modification, it can also be used by high school students who are interested in independent or team studies. The monograph contains sections on: (1) problem-focused environmental education; (2) suggestions regarding problem solving; (3) suggestions for collecting and analyzing data or information; and (4) three projects for implementation. (RH)

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FINDING SOLUTIONS TO ENVIRONMENTAL PROBLEMS:

A PROCESS GUIDE

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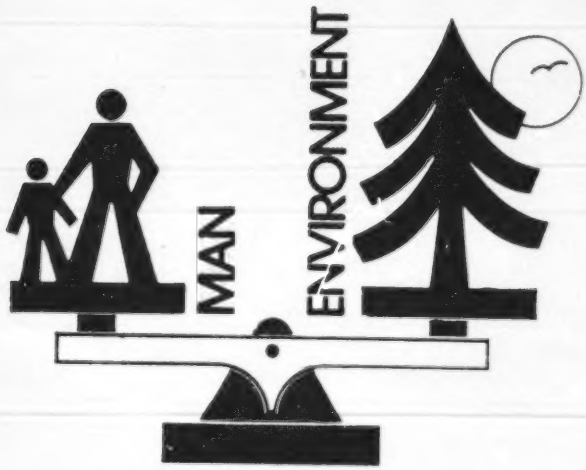

Jonathan M. Wert, Ph.D.

Michael A. Magnoli, Ph.D.

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Jonathan M. Wert, Ph.D.
Environment Center
The University of Tennessee
South Stadium Hall
Knoxville, Tennessee 37916

Michael A. Magnoli, Ph.D.
Environmental Education
Mobile County Public Schools
P. O. Box 1327
Mobile, Alabama 36601

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FINDING SOLUTIONS TO

ENVIRONMENTAL PROBLEMS: A PROCESS GUIDE

I. INTRODUCTION AND PURPOSE

Late in the 1960's and early 1970's, concern for the deterioration of the natural and manmade environment surfaced and spread rapidly across the Nation. This environmental movement was first initiated by a small group of scientists. Eventually many citizens as well as professional people jumped on the "environmental bandwagon."

Some individuals and/or groups preferred the emotional approach, with proclamations of the "sky is falling," comprising their total contribution to the environmental movement. Some spent their time treating symptoms instead of causes. Others determined how dirty the air or water was and attempted to use their findings to make changes even if it resulted in closing down industries--the very places they depended upon for products and employment. In the process, many individuals and groups experienced frustration or learned a fast lesson on how the real social, economic, and political systems operate. Still another group of a more serious nature began to study environmental problems more thoroughly, looking into social, economic, and political ramifications. This group didn't stop with merely making people aware of problems but followed through with suggestions for accepted action to improve laws and education, conduct research, change lifestyles, or establish constructive remedial programs which ultimately resulted in an improved environment. In addition, some special interest groups were very

effective in getting results by concentrating upon a specific issue (e.g., preservation of a wilderness area, or cleaning up a river).

As more and more people became involved in the environmental movement, they encountered complex problems and difficulties in getting organized to obtain the desired results. They found a shortage of effective processes or methodologies for planning and implementing action. The number of political bases which had to be touched, volumes of materials to be studied for objectivity and accuracy, and the problems associated with participating in the decision-making process were mind-boggling.

Even today there are few practical models available for comprehensive environmental problem-solving. Unfortunately, many published works are highly theoretical, lacking the required specificity or substance essential for effective participation in problem-solving and program planning. Too few people think along the lines of comprehensive planning--how one problem relates to another, the interrelationships of disciplines, tradeoffs, and costs. This guide is an attempt to provide a workable methodology for helping college students and citizen groups to identify the most pressing environmental problems in their communities and to find solutions to them. With a little modification, it can also be used by high school students who are interested in independent or team studies. Three projects are provided for this purpose.

II. THE PROBLEM-FOCUSED ENVIRONMENTAL EDUCATION PROGRAM

To those instructors or group leaders currently involved in programs for environmental studies, this guide is self-explanatory. The three projects described here can easily be incorporated into an existing program. If no such program exists, the instructor or leader will need to develop guidelines for the group or students to follow in designing the study and preparing a report. Questions to be considered in preparing such guidelines include:

1. What are the policies for researching the problem? For utilizing the library and community resource people? (The use of libraries and resource people from the many agencies and organizations concerned with specific problems will be a critical part of any project).

2. Will a presentation of the study to a group be required?

3. How will the report be evaluated?

4. How many copies of the report must be turned in?

5. Should the report include an abstract? Be written in the third person?
Typed? Footnoted? Documented with photographs?
Include a bibliography?

Before beginning the study, three items should be considered by the student--complexity, time, and cost.

Complexity. Probably the most difficult task is identifying a problem and narrowing the study down in scope so all the constraints or drawbacks in completing it are known. Don't select a problem which is beyond available capabilities or for which there are inadequate resources--literature, supplies, materials--available for completing the work. Doing so would only result in a frustrating experience and a waste of time.

Time. Prepare a schedule of the work planned so it can be completed before the end of the quarter or semester.

Cost. The three projects described in this paper require little money, if any. However, a description of the equipment, supplies, and materials needed and an estimate of the costs should be prepared before deciding definitely on any given problem. The instructor should be consulted about the cost. There may be funds available for the study within the institution, or they may be obtained through a grant from a foundation, state, or federal agency. However, the process of writing grant proposals and the time lapse before the funding decision is made is often a project by itself.

III. ENVIRONMENTAL PROBLEM-SOLVING

Problems associated with resource utilization and the environment are numerous. As the population and demand upon world resources increase, so do the number of problems or concerns. There are no simple solutions to these complex problems and implementing solutions to one problem often results in the creation of other problems. For example, stopping air pollution by closing down an industry might result in the loss of products and jobs. Therefore, it is very important that the relationship of one problem to another be studied. Economic, social, and political implications should be considered when arriving at solutions. Consider economics. One might select the solution that goes farthest to solve the problem, but then find that funds are not available or that the cost is too great in relation to the benefits. In this case, consider priorities and alternate solutions.

Keep in mind that finding solutions to environmental problems begins with the individual. It will do very little good to be a "guilt slinger" or point the finger at someone else until you have examined your own behavior and lifestyle to determine whether your own actions change the environment in desirable or undesirable ways.

The real result of this problem-solving approach is not the report prepared, but the experience gained by seeing what is involved in finding answers that recognize environmental protection and other public needs. The widespread national environmental concern shown a few years ago is being replaced by worries over inflation and unemployment. Many people began to lose interest in environmental problems when they found that the answers were not simple--that, for example, deciding what to do about problems posed by offshore drilling or an Alaska pipeline also involves facing the complexities of obtaining an adequate national oil supply.

America is going to be facing these kinds of decisions not just in the next few years but for generations. How wisely those decisions are made will determine our country's future quality of life. You can make a positive contribution in determining how well they are made if you are willing to be an actively involved citizen and to devote time for studying and understanding these sometimes complex problems and issues. You can speak out on these issues and be heard--if you demonstrate that you have done your homework, have faced the issues with an open mind, and know what you are talking about.

IV. COLLECTING AND ANALYZING DATA OR INFORMATION

In many situations, data on environmental concerns are already available. If this is the case, there is no sense in wasting time repeating investigations unless to substantiate accuracy of the data. The following discussion briefly describes some approaches for collecting data or information and how to analyze it.

Interviewing

Project No. 1 (Method No. 2) involves interviewing people in the community in order to determine what citizens feel to be the most pressing local environmental concerns. This process can be carried out face-to-face or by telephone. In addition to talking with individual citizens, it may also be appropriate to contact representatives from civic clubs, the Chamber of Commerce, industry, and government. Before conducting interviews, prepare a good list of questions. During a telephone interview, avoid asking general or vague questions and requests like "send me anything you have on environment and air pollution." Keep in mind that professionals in government or industry may not have time to figure out what is really needed or to research the problem. However, they can often send documents on a specific concern or give leads on where to find material.

Firsthand Observation

One of the best ways to determine the magnitude of an environmental concern is to go to the problem site and observe firsthand. A great deal can be learned about the quality of the environment by using the five senses--seeing, hearing, smelling, feeling, and tasting. However, be very careful

to avoid impairing your health. For example, you wouldn't want to stick your hand in an effluent or taste a substance which could be highly caustic. Detergent foam, dyes, dead aquatic life, or strong offensive odors from water are evidence that something is wrong and deserves further investigation. These types of environmental insults should be reported immediately to local health authorities. Officials from these agencies will usually be able to provide details on the problem. If they are not aware that the problem exists, they will appreciate having it called to their attention.

Questionnaires

Questionnaires are quite frequently used to collect information about environmental problems. Specifically, they can be designed to determine the knowledge level of various target groups or individuals. The specific use of a questionnaire is discussed in more detail in PROJECT NO. 1, pages 13-15.

Testing

There are two types of testing which might be of interest in the study:

1. The attitudes and knowledge of students or citizens about the environment might be tested. For example, a possible question might be, "What is the major source of water pollution?," with possible answers being (a) dyes, (b) siltation (sediment), (c) chemicals, (d) sewage, and (e) solid waste. By determining the strengths and weaknesses of those being tested, one will have a better understanding of people's knowledge and concern for the environment and the type of educational or remedial programs needed.

2. Any study of the literature might reveal that essential data are either not available or are of highly questionable accuracy. In this case, it might be necessary to request the appropriate agencies to test or retest the quality of water, air, or noise, or it might be done as part of the study. The skills developed by monitoring are very important. Numerous books are available on testing techniques from libraries. References may also be obtained by contacting experts in the agencies having responsibilities for specific environmental control programs.

Types of Data Available

There is a wealth of technical data available on energy, population, land use, water, air, and what constitutes too much of a chemical or substance in the air and water which could impair health. Standards, regulations, or laws are usually designed from these data. For this reason, become familiar with local, state, and national standards, laws, and violations as they relate to the area of concern. This information can be obtained by going directly to city or local government agencies, state representatives or senators, U.S. Congressmen and Senators, libraries, and federal agencies such as the Environmental Protection Agency.

Federal agencies are required by law (National Environmental Policy Act--NEPA) to prepare environmental impact statements on any projects which affect the environment in positive or negative ways. These documents are usually very comprehensive and contain valuable data. If your concern involves a federal agency, check with its information office to see if they

have an environmental impact statement and obtain a copy for review. A good study would be to obtain a draft copy of an environmental impact statement dealing with a development project and determine whether it adequately addresses the questions given in Project No. 2. The findings from this review should be reported to the agency responsible for development, to elected public officials, and to the media.

Analyzing Existing Data and Information

Determining whether data and information are objective or accurate is a difficult and time-consuming process. You will soon discover that we are suffering from information overload. While reviewing or studying documents, ask the following questions:

1. Who designed the study and for what purpose?
2. Did the investigator make any general assumptions or take things for granted?
3. Did the investigator clearly state how data were obtained and how conclusions were arrived at?
4. Did the investigator conduct the study to further support an action which had already been decided upon at an earlier date by a special interest group?
5. Did the investigator ask biased questions in order to obtain the answers needed to support the views of a special interest group?
6. Did the investigator doublecheck data for accuracy?
7. Were sources of data or information used in the study reliable, accurate, and up-to-date?
8. Did the investigator look for, describe, and select from alternatives when arriving at solutions or conclusions?
9. Did the investigator look thoroughly into the environmental, social, and economic aspects of the problem?

Telephone Directory

The telephone directory is one of the best sources for obtaining information--both the white and yellow pages. There is often an easy reference list of federal, state, and local government and other public service agencies. By scanning this, it will be easy to find out who has responsibility for what. Make the same check for colleges, universities, industries, libraries, and private organizations. Some of the major agencies or organizations which will have either legal responsibility or interest in the problem are listed as follows:

Federal agencies

Appalachian Regional Commission (ARC)

Corps of Engineers

Council for Environmental Quality (CEQ)

Department of Agriculture

Forest Service
Soil Conservation Service

Department of Health, Education, and Welfare (HEW)

Department of Housing and Urban Development (HUD)

Department of the Interior

Department of Transportation (DOT)

Energy Research and Development Administration (ERDA)

Environmental Protection Agency (EPA)

Federal Energy Administration (FEA)

National Aeronautics and Space Administration (NASA)

National Science Foundation (NSF)

Tennessee Valley Authority (TVA)

State agencies

Departments of agriculture

Departments of conservation

Departments of health

Departments of transportation

Game and fish commissions

Planning offices or commissions

State energy offices

Development districts

Watershed associations

Other agencies

Agricultural Extension Agency

Building inspection departments (local governments)

Chamber of Commerce

City attorney

District attorney

Environmental Defense Fund, Inc.

Friends of the Earth

Izaak Walton League

Sierra Club

League of Women Voters

Legal Aid Society

Local air pollution control agencies

Local health departments

Local planning commission

National Audubon Society

National Wildlife Federation

State wildlife federations

State Environmental Council or Quality Association

Tuberculosis and Respiratory Disease Association

Urban Leagues

Zero Population Growth

Libraries

It is best to find out what is available in your local libraries before proceeding to collect data or information. Begin by researching the subject of concern in your school library, college or university library, federal depository, or public (state, city, county) libraries. The librarian will help guide you to specific books on the subject of interest or to municipal or city directories, newspapers, periodicals, governmental documents, and the vertical file.

Requesting Information

Before requesting data or information, talk to your advisor. It is very important to make sure someone else in the group isn't doing the same thing. Frequently, an entire class or group makes a request for the same document. Requesting documents that are already available or requesting multiple copies only adds to conservation problems. Whether requests are made in writing or by phone, be as specific as possible.

Keeping Records for the Report or Case Study

It is important to record findings and observations in a notebook or diary. Don't depend on your memory. Things to consider would include: time, place, observations made, test measurements, references, names of people interviewed, and topics. After deciding upon one of the three projects herein, it will be easy to make an outline of categories for record-keeping purposes. REMEMBER--keep these records as events occur. They will be invaluable when writing the final report.

V. PROJECTS FOR IMPLEMENTATION

Preparation of reports is required for carrying out the three projects described in this guide. In the search for data and information, be sure to contact personnel from the entities (1) causing the distinct problem, (2) opposing the problem, and (3) having a legal responsibility to deal with the problem.

PROJECT NO. 1

IDENTIFYING AND LESSENING THE IMPACT OF AN ENVIRONMENTAL PROBLEM IN YOUR COMMUNITY

Discussion -- The Appendix contains a questionnaire with a comprehensive listing of environmental concerns. There are three methods to consider in using the information in the Appendix.

Method No. 1 -- This method is quite simple. Based on your knowledge about a particular concern in your community, select the category and

element which you would like to learn about. For instance, "solid waste disposal," which is presented in the Appendix under categories "Water Problems" and "Land Use," is also related to other categories (e.g., Population, Resource Depletion, Aesthetics, and Health Hazards). Study the relationships between the categories and, in the report, address as many facets of the situation as time permits. In this method, the individual decides the priority area of concern.

Method No. 2 -- This method is a little more time-consuming and requires funds for materials such as paper and reproduction. It involves using the material in the Appendix as a checklist and personally interviewing at least 50 people from different age groups and walks of life in the community to determine which concern is considered to be of highest priority to those interviewed. Their primary concern then becomes the problem for study. In addition to the personal interview, the telephone can be used to obtain the desired information.

Method No. 3 -- This method requires more time than Methods 1 and 2 and more cost for materials (paper, reproduction, postage). It may be appropriate as a team project. It requires utilizing the material in the Appendix to prepare a questionnaire which can be mailed to 100 to 500 people from different walks of life in the community. A possible problem with this method is a poor return of questionnaires. It might be desirable to follow up with a telephone call to each respondent a few days after the questionnaire has been mailed to help ensure its completion and return. As in Method 2, people in the community help you select the most important problem for the study.

The design of the study and actual format of the report (abstract, statement of the problem, etc.) should be determined with the instructor. Some important questions which should be answered in the report are:

1. What is the nature or scope of the problem (solid waste, energy, air pollution, transportation, etc.)?

2. Why does the problem exist? (This could include such topics as lack of legislation and enforcement, lack of understanding and concern, lack of a solution.)

3. What is the existing status of the problem in your community, state, region, and nation? (For example, if you select solid waste disposal, what is the situation with littering, open dumps, sanitary landfills, recycling, burning refuse to generate electricity?)

4. Who (individuals including yourself and/or agencies) has the responsibility for offsetting the problem, and what is being done about it? (Include information on legislation, enforcement, funding of remedial programs at the local level, monitoring pollution.)

5. What is the significant impact of the problem on the environment including the effects on plant and animal populations? (Include a discussion on the amount and type of land lost, transportation problems caused, changes in air and water quality and in wildlife habitat, noise.)

6. What are the possible solutions to the problem? (Consider alternative solutions, compromises or trade-offs, and an estimated cost for each solution.)

7. What can be done to help solve or minimize the problem? (Consider the individual or the group-- club, professional organization-- attending hearings, voting, establishing and enforcing legislation, monitoring.)

8. What can be done as an individual (or group) to help solve or minimize the problem? (REMEMBER--this is the constructive action part of the project and is, therefore, very important.)

PROJECT NO. 2

ASSESSING IMPACT OF A DEVELOPMENT PROJECT

Discussion -- On January 1, 1970, the President signed into law the National Environmental Policy Act (NEPA) which declared a national policy to encourage productive and enjoyable harmony between people and their environment.

NEPA authorized the establishment of a Council on Environmental Quality (CEQ) in the Executive Office of the President. CEQ is charged with responsibility to study the condition of the Nation's environment, to develop new environmental efforts, to see that all federal activities take environmental considerations into account, and to assist the President in assessing environmental problems and in determining ways to solve them.

To ensure that environmental amenities and values are given systematic consideration equal to economic and technical consideration in the federal decision-making process, NEPA requires each federal agency to prepare an environmental impact statement in advance of each action, recommendation, or report or legislation that may significantly affect the quality of the human environment. Such actions may include new highway construction, harbor dredging or filling, nuclear power plant construction, large-scale aerial pesticide spraying, river channeling, new jet runways, munitions disposal, bridge construction, waste treatment or disposal projects, and more. Even though this project deals specifically with development projects, environmental impact statements are often required on other types of actions. NEPA applies to any federal action (e.g., changes in rail rates, adoption of

health standards, approval of drug licenses). There are others which are more local in nature such as changes in land use without construction, regulations such as hunting on federal lands, use of snowmobiles, and establishment of nature centers.

This project requires the preparation of a written report. It has been designed to help you learn some of the things planners/developers should consider before implementing a project that could have adverse effects on the environment. To begin, select a development project such as a shopping center, subdivision (housing development), dam, nuclear power plant, airport, or industry in the community or state. The design of the study and actual format of the report--project title, abstract, statement of the problem, and description-- should be determined with your advisor.

The assessment will begin by examining what planning has been done for the project or proposal under study. For example:

1. What need will this project or activity serve? Has the responsible organization given careful study to this need? (A highway or sewage treatment plant would be built to serve a specific need, while an office building or a housing development might serve to help meet a more general demand for such facilities.)

2. What factors were considered in choosing this type of development, facility, or activity? Were other alternatives considered and why were they rejected?

3. Why was this site selected? Were other possible locations considered?

In assessing how well this basic planning has been done, it is important to be realistic about the choice of alternatives. Usually it is easier to recognize the problems posed by the specific project you are studying than to foresee what faults or limitations might arise from a different approach or at a different location. Often people in the area affected by

a proposed project simply want it built "someplace else." In other cases there may be new technological approaches that have drawn attention because of their potential advantages, but are not yet sufficiently proven or available at practical cost for the situations you are studying.

In determining a project's environmental impact, some of the questions which should be considered in the report are:

1. Will there be a change in air quality during and/or after construction?
2. Will there be a change in water quality during and/or after construction?
3. Will there be any change in the water table as a result of the project?
4. How will excess excavated materials be disposed of?
5. How will the land structure be changed (e.g., ground cover and contour from grading, channelization, drainage of swamps, changes in natural drainage systems)?
6. Will crop or grazing land be affected by the project?
7. Will the level of noise change during and/or after construction?
8. Will there be an aesthetic (visual) deterioration as a result of the project or any odors?
9. Will any nonrenewable resources or mineral deposits (such as coal or uranium) be affected?
10. How will the diversity and density of animal and plant populations be affected?
11. Will the project interfere with animal migration routes?
12. Will any foreign or domestic animal or plant species be introduced into the project area?
13. Will any rare or endangered species be affected by the project?
14. Will any historic or archaeological features, unique wildernesses, or natural areas be affected by the project?
15. What changes will occur to recreation lands and wildlife habitat?

16. Will the project ultimately change the amount of energy entering the earth's atmosphere through a given wave spectrum; for instance, change the ozone layer and ultraviolet light?

17. Will the project result in changes in climate, weather, temperature, or wind patterns?

18. Will the project affect plant populations to the extent that there is a reduction in atmospheric oxygen supplies?

19. How will possible contaminants (radioactive wastes, solid wastes, chemicals) be transported, stored, and disposed of after construction?

20. Will the functions of the project have the potential of changing the genetic code of animals?

21. What changes in human population density will occur during and after construction in the project area?

22. How will education (e.g., school enrollments, programs, teaching needs and health services) be changed as a result of the project?

23. How will transportation systems and services in the project area be changed during and after construction?

24. Will the project result in the construction of small businesses in the area which could have a significant effect (either positive or negative) on the environment?

25. What will be the number and types of new jobs available during and after construction?

26. What changes will occur to the overall economic status of the area; consider income, taxes, cost of electricity, products, and services.

27. What provisions have been made for adequate security, police, and fire protection?

28. What provisions have been made to ensure the public protection against natural hazards which could be associated with the project from earthquakes, tornadoes, flooding, sinking or settling of the earth under foundations?

29. Are there any earthquake or geological faults on or near the project site?

30. What legislation applies to the project at the national, state, and local levels? Which laws are being adhered to or enforced? Will there be a need to change pollution standards or regulations or zoning ordinances?

Whenever one of these items raises the possibility of a significant impact, try to determine whether the developer has considered the problem and has made an adequate effort to offset or minimize it. Again, alternatives must be examined and their costs compared to their benefits in judging what is a workable way of minimizing each of these impacts.

Once you have answered each of the questions above in as much detail as your time permits, address the following questions in your report:

1. How would the overall "quality of life" be changed as a result of the project? How do the benefits compare with the adverse effects? (This is a summation of the preceding 30 questions.)

2. Are there major effects that have not been adequately considered and met by the developer (or by any agencies responsible for approving this project, its land use, or its environmental precautions)?

3. If this is the case, what actions would you recommend to help ensure that the project's major environmental impacts are considered? (Include constructive actions which you can take as an individual or as part of an organization concerned with community and environmental improvement.)

PROJECT NO. 3

ENVIRONMENTAL RESEARCH

This project is particularly appropriate if your locality includes a laboratory, test facility, or pilot project where research and development are underway on some new approach to environmental improvement. This could be a new technique for controlling air or water pollution, experimenting with solar energy, recycling wastes, protecting land or forests, conserving natural resources or using them more efficiently--any area relating to a potential for a better environment.

The report should describe in detail:

1. The full background of the problem which the research is designed to investigate.

2. The nature of this approach to the problem, its potential advantages, and possible applications.

3. The present status of development.

4. Any technical obstacles that must be overcome.

5. Projected cost of using this approach, if it proves successful. Discuss whether the cost may be an obstacle in getting it accepted for general use.

VI SUMMARY

The study of local environmental problems through an independent or group study program provides an ideal opportunity for making education relevant to real-life situations. Every individual has a responsibility as a citizen to get involved in resolving the environmental issues affecting their destiny or well-being. We are all great exploiters of the earth's resources and must begin to look more thoroughly into the present and future consequences of our acts. Hopefully, by seeking information through research and formulating ideas, a new dimension and understanding about comprehensive planning and the complexity of solving environmental problems will be obtained. It is also hoped that the three projects suggested in this paper will help foster attitudes, values, and lifestyles which enhance the quality of life and the environment.

APPENDIX

ENVIRONMENTAL CONCERNS[1]

What do you feel are the most urgent environmental concerns? (Please rank the major categories by number in order of priority. Do the same for each of the elements within the categories).

MAJOR CATEGORIES: Rank from "1" (highest) to "14" (lowest)

_____Population Problems

_____Transportation Problems

_____Energy Problems

_____Resource Depletion

_____Natural Environment

_____Aesthetics

_____Materialism

_____Planning, Design, and Construction Problems

_____Economic-Social-Cultural Problems

_____Knowledge Gaps

_____Health Hazards

_____Water Problems

_____Land Use Problems

_____Air Problems

_____Others*

*Difficulties in citing the many concerns on this form cause the writer to urge you to provide any additional examples you might think of.

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[1]Wert, Jonathan M., "A Process Model Showing How a Federal Agency, Such as the Tennessee Valley Authority, Can Utilize its Resources to Cooperate with Other Agencies in the Development of Environmental Education Programs for the Tennessee Valley Region," unpublished doctoral dissertation, University of Alabama, 1974, pp. 103-106.

ELEMENTS WITHIN MAJOR CATEGORIES

POPULATION PROBLEMS: Rank 1 to 4

_____Distribution

_____Growth rate

_____Rural out-migration

_____Drain on nonrenewable resources

_____Others*

TRANSPORTATION PROBLEMS: Rank 1 to 3

_____Highway construction

_____Lack of adequate mass transit systems

_____Traffic congestion

_____Others*

ENERGY PROBLEMS: Rank 1 to 3

_____Fuel shortages

_____Lack of development of alternate energy resources

_____Lack of efficiency in use and production

_____Others*

RESOURCE DEPLETION: Rank 1 and 2

_____Lack of recycling for nonrenewable resources

_____Improper management of renewable resources

_____Others*

NATURAL ENVIRONMENT: Rank 1 to 4

_____Endangered animal species

_____Endangered plant species

_____Loss of fishery and wildlife resources

_____Loss of natural habitat

_____Others*

AESTHETICS: Rank 1 to 3

Distracting:

_____Sights

_____Sounds

_____Smells

_____Others*

MATERIALISM: Rank 1 to 4

_____Excessive waste in packaging

_____Lack of durable, long-lasting goods

_____Status products

_____Consumerism (product knowledge)

_____Others*

PLANNING, DESIGN, AND CONSTRUCTION PROBLEMS: Rank 1 to 5

_____Aesthetically and/or functionally poor architectural design

_____Lack of comprehensive regional planning

_____Lack of environmental understanding and concern among planners, designers, and contractors

_____Lack of planning to prevent future environmental problems and to solve current problems

_____Inadequate and/or shoddy construction

_____Others*

ECONOMIC-SOCIAL-CULTURAL PROBLEMS: Rank 1 to 9

_____Apathy and lack of leadership in problem-solving

_____Failure of society to meet human psychological needs

_____Harmful social and work environments

_____Lack of adequate housing

_____Lack of adequate job opportunities

_____Lifestyles which are detrimental to environmental quality

_____Loss of cultural identity and cultural shock

_____Poverty

_____Consumer problems (prices)

_____Others*

KNOWLEDGE GAPS: Rank 1 to 3

_____Lack of programs to find and promote solutions to environmental problems

_____Lack of solutions to environmental problems

_____Lack of understanding of environmental problems

_____Others*

HEALTH HAZARDS: Rank 1 to 6

_____Air pollution

_____Pesticides, herbicides, and toxic metals

_____Food additives

_____Noise

_____Radiation

_____Water pollution

_____Others*

WATER PROBLEMS: Rank 1 to 9

_____Contamination of ground and surface waters by chemicals, dyes, pollutants

_____Flood control

_____Lack of water use plans

_____Limitation of fresh water supplies

_____Sedimentation

_____Thermal discharges

_____Soft waste disposal

_____Solid waste disposal

_____Agricultural runoff (fertilizers, pesticides, and herbicides)

_____Others*

LAND USE PROBLEMS: Rank 1 to 9

_____Erosion

_____Inadequate zoning and planning

_____Loss of parks, open space, wetlands, and natural areas

_____Siting of facilities, e.g., nuclear power plants, power transformers and lines, etc.

_____Loss of agricultural lands due to urbanization and inundation

_____Mining operations

_____Solid waste disposal

_____Visual blight (litter, billboards, etc.)

_____Lack of land ethic

_____Others*

AIR PROBLEMS (Emissions): Rank 1 to 3

_____Trash burning; furnaces in homes

_____Industrial and power plants

_____Automobiles, trucks, buses, airplanes, motorcycles

_____Others*